

1. A method for treating a fluid flowing in a pipe, the method comprising:
vibrating an element in the pipe to produce acoustic energy; and
adjusting the strength and frequency of the acoustic energy to reduce the viscosity of the fluid.
2. The method of claim 1 further comprising adjusting the strength and frequency of the acoustic energy to remove any layers of the fluid on the wall of the pipe.
3. The method of claim 1 further comprising adjusting the strength and frequency of the acoustic energy to disintegrate any materials contained in the fluid.
4. The method of claim 1 further comprising adjusting the strength and frequency of the acoustic energy to remove any materials contained in the fluid that accumulate on the wall of the pipe.
5. The method of claim 1 further comprising adjusting the strength and frequency of the acoustic energy to remove any layers of the fluid on the wall of the pipe, disintegrate any materials contained in the fluid, and remove any materials contained in the fluid that accumulate on the wall of the pipe.
6. The method of claim 1 wherein the acoustic energy is in the form of ultrasonic waves that are propagated through the fluid.
7. The method of claim 6 wherein the waves oscillate at an ultrasonic frequency to produce an oscillatory force that is applied to the fluid and any materials contained in the fluid.
8. The method of claim 1 wherein the acoustic energy includes an acoustic cavitation mechanism that causes an increase of the local temperature of the fluid which decreases the viscosity of the fluid and therefore decreases the amount of any materials contained in the fluid.

9. The method of claim 8 wherein the acoustic energy also includes an acoustic streaming mechanism which disintegrates any materials on the wall of the pipe.
10. The method of claim 1 wherein the vibration of the element produces heat and causes mechanical shear and cavitations in any materials contained in the fluid due to molecular bonds and attractions.
11. The method of claim 6 wherein the fluid is a hydrocarbon.
12. The method of claim 11 wherein the hydrocarbon is a crude oil.

13. A system for treating a fluid flowing in a pipe, the system comprising an element disposed in the pipe that vibrates to produce acoustic energy of a strength and frequency to reduce the viscosity of the fluid.
14. The system of claim 13 further comprising an electrical source electrically connected to the element to apply an electrical input to the element to vibrate the element.
15. The system of claim 14 wherein the electrical source is disposed in the pipe.
16. The system of claim 14 wherein the electrical source is a battery pack.
17. The system of claim 13 wherein the element is a piezoelectric ceramic.
18. The system of claim 13 wherein the strength and frequency of the acoustic energy is such that it removes any layers of the fluid on the wall of the pipe.
19. The system of claim 13 wherein the strength and frequency of the acoustic energy is such that it disintegrates any materials contained in the fluid.
20. The system of claim 13 wherein the strength and frequency of the acoustic energy is such that it removes any materials contained in the fluid that accumulate on the wall of the pipe.
21. The system of claim 13 wherein the strength and frequency of the acoustic energy is such that it removes any layers of the fluid on the wall of the pipe, disintegrates any materials contained in the fluid, and removes any materials contained in the fluid that accumulate on the wall of the pipe.
22. The system of claim 13 wherein the acoustic energy is in the form of ultrasonic waves that are propagated through the fluid and any materials contained in the fluid.

23. The system of claim 22 wherein the waves oscillate at an ultrasonic frequency to produce an oscillatory force that is applied to the fluid and the materials.

24. The system of claim 13 wherein the acoustic energy includes an acoustic cavitation mechanism that causes an increase of the local temperature of the fluid which decreases the viscosity of the fluid and therefore decreases the amount of any materials contained in the fluid.

25. The system of claim 24 wherein the acoustic energy also includes an acoustic streaming mechanism which disintegrates any materials on the wall of the pipe.

26. The system of claim 13 wherein the vibration of the element produces heat and causes mechanical shear and cavitations in any materials contained in the fluid due to molecular bonds and attractions.